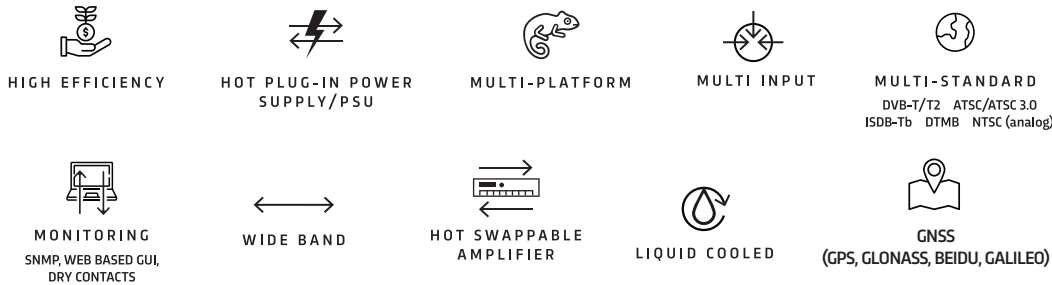


# 7,5 kW COFDM - 9 kW ATSC - 15,6 kWps (Analog) - 9 kW DAB

# 7,5 kW VHF-BIII TV TRANSMITTER LQ



## TV TRANSMITTER



FRONT VIEW



- ☐ Multistandard: ATSC (including ATSC 3.0), ISDB-T, DTMB, DVB-T/T2, Analog, DAB.
- ☐ High energy efficiency to minimize consumption and OPEX .
- ☐ Automatic digital static or adaptive Linear and Non-Linear Pre-correction.
- ☐ Hot Pluggable Power Amplifiers.
- ☐ Power Amplifiers with triple redundant Hot Plug-in power supplies.
- ☐ Temperature-controlled closed liquid cooled system for better efficiency and performance equipped with Dual Redundant Pump plug-In (tool-free pump swap) and dual-blower heat exchanger.
- ☐ Multi input: 2x ASI seamless switch, 2x SAT (S2 with CAMSlot), 2x IP Ethernet, 2x ETI/EDI + 1xSFP (optical/electrical), A/V for analog broadcasting.
- ☐ USB input to fast save/load configurations. Built-in GNSS receiver (GPS, GLONASS, BEIDU, GALILEO) for SFN application.
- ☐ Remote control via SNMP, friendly web browser GUI, no need of plug-in or apps, dry contacts.

The P75 Line is the multi amplifier liquid cooled Transmitter family from SYES.

P75-06 is equipped with Driver (Dual Driver Optiond) and N° 6 plug-In Amplifiers.

It is equipped with High Efficiency Wideband UHF/VHF and Low VHF state-of-the-art amplifiers characterized by high-power density and excellent signal quality granting optimal parameters such as shoulder attenuation and MER.

The P75 amplifiers are hot pluggable and are equipped with 3x redundant Hot Plug-in power supplies each, assuring the maximum reliability and the easiest maintenance.

# TV

## LIQUID COOLED

# 7,5 kW COFDM - 9 kW ATSC - 15,6 kWps (Analog) - 9 kW DAB

## 7,5 kW VHF-BIII TV TRANSMITTER LQ

**TV**  
LIQUID COOLED

| TECHNICAL SPECIFICATIONS                                    |                                                                                                                                                                               |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RF OUTPUT                                                   |                                                                                                                                                                               |
| Output power*                                               | <ul style="list-style-type: none"> <li>7500 Wrms COFDM</li> <li>9000 Wrms ATSC</li> <li>15600 Wp.s. ANALOG</li> <li>9000 Wrms DAB</li> </ul>                                  |
| Spurious / Harmonics                                        | EN 302-296-2                                                                                                                                                                  |
| Shoulders/MER                                               | Typical: >48dB/>38dB                                                                                                                                                          |
| Connector / Impedence                                       | 3 1/8", other available                                                                                                                                                       |
| Bandwidth                                                   | VHF Band BIII (170MHz-230MHz)                                                                                                                                                 |
| Frequency stability                                         | 1 Hz                                                                                                                                                                          |
| Amplification Class:                                        | Either High efficiency (Doherty type) or AB class available                                                                                                                   |
| Final Stage                                                 | No. 6 Amplifiers each with No. 6 Pallets with 4 final transistors each (LDMOS latest technology).                                                                             |
| GENERAL                                                     |                                                                                                                                                                               |
| Mechanical                                                  |                                                                                                                                                                               |
| Composition<br>(Main components in one rack 44U)            | <ul style="list-style-type: none"> <li>1x Exciter</li> <li>6x P75-V Amplifier</li> <li>1x Tx control logic</li> <li>1x cooling drawer, close vase type, dual pump.</li> </ul> |
| Dimensions (WxHxD mm - Weight)                              | 600x2320x1100 440 kg                                                                                                                                                          |
| Cooling                                                     |                                                                                                                                                                               |
| Cooling System                                              | Liquid cooling, close vase type                                                                                                                                               |
| Cooling redundancy                                          | Single or dual pump / single or dual heat exchanger                                                                                                                           |
| Environmental                                               |                                                                                                                                                                               |
| Relative humidity                                           | 95% max. (non-condensing)                                                                                                                                                     |
| Operation temperature range                                 | 0° to 50°C                                                                                                                                                                    |
| Storage temperature range                                   | -20° to 70°C                                                                                                                                                                  |
| Max. installation altitude                                  | 4.600 m a.s.l. (higher altitudes kit on request)                                                                                                                              |
| Power supply & Safety                                       |                                                                                                                                                                               |
| Voltage                                                     | 208/ 400 Vac (three phase) 47 to 63 Hz (auto range p.s.)<br>power factor > 0.98                                                                                               |
| Power Supply                                                | 3x Power supplies In hot plug-in configuration each amplifier.<br>2+1 PS redundancy configuration available                                                                   |
| Efficiency**<br>(typical value referred to OFDM modulation) | Up to 50%                                                                                                                                                                     |
| Safety /EMC                                                 | EN 60215 (IEC 215), EN301-489-53, FCC-73, IS09001-2010.<br>RED 2014/53/UE, RoHS 2002/93/EC                                                                                    |

\*: Power outputs are subject to change due to out-of-band regulations and the required shoulder attenuation / MER, voltage, channel of operation and type of RF output filter.

\*\*: Efficiency depends on several parameters such as operating standard and frequency, output power settings, spectrum performances, environmental conditions etc.

**SYES**

SY.E.S. S.r.l. • Via Zanella, 21  
20851 Lissone (MB) Italy Tel. +39.039.9897.1  
Fax +39.039.9897.363 C.F. / P.IVA 06358330964  
sales@syes.eu | www.syes.eu

# 7,5 kW COFDM - 9 kW ATSC - 15,6 kWps (Analog) - 9 kW DAB

## 7,5 kW VHF-BIII TV TRANSMITTER LQ



TV TRANSMITTER

| DTV MODULATIONS                |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
|--------------------------------|-----------|-----------|-----------|------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|---|
| ATSC 3.0                       |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
| Standard                       |           |           |           | ATSC 3.0: TG3/S32 Physical Layer. STL                                        |           |           |           |           |            |            |            |            |   |
| Inputs ****                    |           |           |           | 2xASI BNC (H) , ohm / 2x TSoiP 10/100/1000 RJ45.                             |           |           |           |           |            |            |            |            |   |
| Guard interval                 |           |           |           | 192, 384, 512, 768, 1024, 1536, 2048, 2432,3072, 3648, 4096 and 4864         |           |           |           |           |            |            |            |            |   |
| Code Rate/<br>Constellation    | 2 /<br>15 | 3 /<br>15 | 4 /<br>15 | 5 /<br>15                                                                    | 6 /<br>15 | 7 /<br>15 | 8 /<br>15 | 9 /<br>15 | 10 /<br>15 | 11 /<br>15 | 12 /<br>15 | 13 /<br>15 |   |
| QPSK                           | ✓         | ✓         | ✓         | ✓                                                                            | ✓         | ✓         | ✓         | ✓         |            | ✓          |            |            |   |
| 16QAM                          |           |           | ✓         | ✓                                                                            |           | ✓         | ✓         | ✓         |            | ✓          |            |            |   |
| 64QAM                          |           | ✓         | ✓         | ✓                                                                            | ✓         | ✓         | ✓         | ✓         | ✓          | ✓          |            |            |   |
| 256QAM                         |           |           | ✓         | ✓                                                                            |           | ✓         | ✓         | ✓         |            | ✓          |            | ✓          |   |
| 1024QAM                        |           |           |           | ✓                                                                            |           | ✓         | ✓         | ✓         | ✓          | ✓          | ✓          | ✓          | ✓ |
| 4096QAM                        |           |           |           |                                                                              |           | ✓         |           | ✓         |            | ✓          | ✓          | ✓          | ✓ |
| DVB-T/-H-T2                    |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
| Standard                       |           |           |           | EN300744. EN302304. EN302755. TS 102831. TS 102 773 (T2-MI)                  |           |           |           |           |            |            |            |            |   |
| Inputs ****                    |           |           |           | 2*ASI BNC, 75 ohm / 3xTSolP 10/100/1000 RJ45.                                |           |           |           |           |            |            |            |            |   |
| FFT Slze                       |           |           |           | 1K (DVB-T2), 2K, 4K, 8K, 16K (DVB-T2), 32K (DVB-T2) incl. ext. carrier modes |           |           |           |           |            |            |            |            |   |
| Code rate                      |           |           |           | 1/2. 2/3. 3/4. 5/6. 3/5 (DVB-T2). 4/5 (DVB-T2) plus 1/3, 2/5 for T2 Lite     |           |           |           |           |            |            |            |            |   |
| Guard interval                 |           |           |           | 1/32,1/16. 1/8.1/4. 19/256 (DVB-T2), 19/128 (DVB-T2), 1/128 (DVB-T2)         |           |           |           |           |            |            |            |            |   |
| Constellation                  |           |           |           | QPSK. 16QAM. 64QAM. 256QAM (DVB-T2). Rotated and no rotated (DVB-T2)         |           |           |           |           |            |            |            |            |   |
| ISDB-Tb                        |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
| Standard                       |           |           |           | ARIB STB-B31, TR-B14                                                         |           |           |           |           |            |            |            |            |   |
| Inputs ****                    |           |           |           | 2xASI BNC, 75 ohm / 3xTSolP 10/100/1000 RJ45                                 |           |           |           |           |            |            |            |            |   |
| FFT Size                       |           |           |           | 2K, 4K, 8K                                                                   |           |           |           |           |            |            |            |            |   |
| Code rate                      |           |           |           | 1/2, 2/3, 3/4, 5/6, 7/8                                                      |           |           |           |           |            |            |            |            |   |
| Guard interval                 |           |           |           | 1/4, 1/8, 1/16, 1/32                                                         |           |           |           |           |            |            |            |            |   |
| Hierarchical Transmission      |           |           |           | Up to 3 layers                                                               |           |           |           |           |            |            |            |            |   |
| Constellation                  |           |           |           | QPSK, 16QAM, 64QAM                                                           |           |           |           |           |            |            |            |            |   |
| ATSC                           |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
| Standard                       |           |           |           | ATSC A/53. A/54. A/64. A/1S3. A/110B. SMPTE-310M                             |           |           |           |           |            |            |            |            |   |
| Inputs ****                    |           |           |           | 2xASI BNC (F)>. 75 ohm /2xTSolP 10/100/1000 RJ45.                            |           |           |           |           |            |            |            |            |   |
| Constellation                  |           |           |           | 8VSB                                                                         |           |           |           |           |            |            |            |            |   |
| Symbol rate                    |           |           |           | 0.76 Msmblos/s                                                               |           |           |           |           |            |            |            |            |   |
| Data rate                      |           |           |           | 19.39 Mbits/s                                                                |           |           |           |           |            |            |            |            |   |
| Trellis coding                 |           |           |           | 2/3                                                                          |           |           |           |           |            |            |            |            |   |
| Reed-Solomon encoder           |           |           |           | 207 / 187 / 10                                                               |           |           |           |           |            |            |            |            |   |
| DTMB                           |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
| Standard                       |           |           |           | DTMB (GB20200/2006)                                                          |           |           |           |           |            |            |            |            |   |
| Inputs ****                    |           |           |           | 2xASI BNC (H), 75 ohm /2xTSolP 10/100/1000 RJ45                              |           |           |           |           |            |            |            |            |   |
| FFT Size                       |           |           |           | Single carrier/ 3780                                                         |           |           |           |           |            |            |            |            |   |
| Constellation                  |           |           |           | 64 QAM, 32 QAM, 16QAM, 4QAM, 4QAM NR                                         |           |           |           |           |            |            |            |            |   |
| Code rate                      |           |           |           | 0,4-0,6-0,8                                                                  |           |           |           |           |            |            |            |            |   |
| Data rate                      |           |           |           | 24,365 Mb/s                                                                  |           |           |           |           |            |            |            |            |   |
| Frame header                   |           |           |           | 420 Symbols/595 Symbols/ 945 Symbols                                         |           |           |           |           |            |            |            |            |   |
| DIGITAL ADAPTIVE PRECORRECTION |           |           |           |                                                                              |           |           |           |           |            |            |            |            |   |
| Type                           |           |           |           | Linear / non linear; selectable                                              |           |           |           |           |            |            |            |            |   |
| Clipping                       |           |           |           | 12 dB                                                                        |           |           |           |           |            |            |            |            |   |
| Operation mode                 |           |           |           | Continuous / Automatic (triggering: time/shoulder level)                     |           |           |           |           |            |            |            |            |   |
| Precorrection status           |           |           |           | Running/Stopped                                                              |           |           |           |           |            |            |            |            |   |
| PAPR                           |           |           |           | Provided                                                                     |           |           |           |           |            |            |            |            |   |

\*\*\*\* Type and number of inputs depends on Exciter HW configuration

**TV**  
AIR COOLED

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## 7,5 kW VHF-BIII TV TRANSMITTER LQ

**TV**  
LIQUID COOLED

| ANALOGUE MODULATIONS      |                                                                                                                   |
|---------------------------|-------------------------------------------------------------------------------------------------------------------|
| Standard                  | PAL std. B/G, H, K, 1, 11, M, N - NTSC Std. M - SECAM D/K                                                         |
| Ref. Standard             | ITU-R BT.470-6                                                                                                    |
| Audio                     | Mono IRT                                                                                                          |
| Modulation /amplification | Common                                                                                                            |
| Video input               | 1V pp (0.5 to 2 V) (OC component level in the range -5 to 5 V) - Ret. loss better than -30 dB (0 to 6 MHz) (75 W) |
| Audio input               | 6 dBm $\pm$ 6 dB (Df= 25 to 50 kHz) - Ret. loss: better than -30 dB (40 Hz to 15 kHz) (600 W, bai.)               |
| Video Connector           | 1xBNC female. 75 Ohm                                                                                              |
| Audio Connector           | DB9 with patch cable for 2xXLR female, 600 W (IRT config.: 2 inputs)                                              |
| REPEATER                  |                                                                                                                   |
| Type                      | SFN gap filler, transposer and MFN re-transmitter                                                                 |
| RF input                  |                                                                                                                   |
| Rfm frequency range       | 146 to 861 MHz                                                                                                    |
| Input level               | -10dBm to -60dBm (SFN Gap filler)<br>-20dBm to -70dBm (QEF reception)                                             |
| Input ret. Loss           | better than -16 dB                                                                                                |
| RF in connector           | N type . 50 Ohm                                                                                                   |
| Echo cancellation         |                                                                                                                   |
| Residual echo suppression | up to more than 30 dB<br>(30dB are obtained at 0dB input echo)                                                    |
| Noise figure              | max 10 dB (SFN Gap filler)<br>max 8 dB (Transposer)                                                               |
| Immunity to other channel |                                                                                                                   |
| N+1                       | OFDM/OFDM > 30 dB                                                                                                 |
| others                    | OFDM/OFDM > 40 dB                                                                                                 |
| SATELLITE TRANSPOSER      |                                                                                                                   |
| SatTV standard            | DVB-S - DVB-S2 - EN300421                                                                                         |
| Frequency range           | 950 - 2150 MHz (Ku band)                                                                                          |
| Signal level              | -65 to -25 dBm                                                                                                    |
| Connector                 | SMA f - CAM slot (Cond. Access)                                                                                   |
| LNB control               | Available through RF input. PS, polarity / band selection: by standard 13/18VDC and 22kHz signaling               |
| CLOCK AND SYNCHRONIZATION |                                                                                                                   |
| Internal clock            | OCXO single oven or dual oven (optional)                                                                          |
| External 10 MHz reference | BNC (F). Impedance: 50 ohm / high (selectable). Level: -5 to +10 dBm                                              |
| External 1pps reference   | BNC (F). Impedance: 50 ohm / high (selectable)                                                                    |
| SFN                       | SFN resolution 1100 ns SFN configurable delay $\pm$ 500 ms                                                        |
| Stability                 | time: max $\pm$ 10-7 /year - temperature: max $\pm$ 2.5 10-8 (-20°C to +70 °C)                                    |
| MONITORING                |                                                                                                                   |
| LCD Display               | Local operation through LCD display and keyboard located on the front panel                                       |
| Front RJ-45               | Local operation through a Web Server Graphical User Interface, Remote                                             |
| Rear RJ-45                | Network management (via SNMP)                                                                                     |
| GUI                       | Web Server Graphical User Interface xHTML based                                                                   |
| SNMP                      | V2c / V3 provided                                                                                                 |

**SYES**

SY.E.S. S.r.l. • Via Zanella, 21  
20851 Lissone (MB) Italy Tel. +39.039.9897.1  
Fax +39.039.9897.363 C.F. / P.IVA 06358330964  
sales@sy.es.eu | www.sy.es.eu